IV. CHEMICAL RELEASE AND TRANSFER PROFILE

This section is designed to provide background information on the pollutant releases that are reported by this industry. The best source of comparative pollutant release information is the Toxic Release Inventory System (TRI). Pursuant to the Emergency Planning and Community Right-to-Know Act, TRI includes self-reported facility release and transfer data for over 600 toxic chemicals. Facilities within SIC Codes 20-39 (manufacturing industries) that have more than 10 employees, and that are above weight-based reporting thresholds are required to report TRI on-site releases and off-site transfers. The information presented within the sector notebooks is derived from the most recently available (1993) TRI reporting year (which then included 316 chemicals), and focuses primarily on the on-site releases reported by each sector. Because TRI requires consistent reporting regardless of sector, it is an excellent tool for drawing comparisons across industries.

Although this sector notebook does not present historical information regarding TRI chemical releases over time, please note that in general, toxic chemical releases have been declining. In fact, according to the 1993 Toxic Release Inventory Data Book, reported releases dropped by 42.7 percent between 1988 and 1993. Although on-site releases have decreased, the total amount of reported toxic waste has not declined because the amount of toxic chemicals transferred off-site has increased. Transfers have increased from 3.7 billion pounds in 1991 to 4.7 billion pounds in 1993. Better management practices have led to increases in off-site transfers of toxic chemicals for recycling. More detailed information can be obtained from EPA's annual Toxics Release Inventory Public Data Release book (which is available through the EPCRA Hotline at 800-535-0202), or directly from the Toxic Release Inventory System database. (For user support call 202-260-1531)

Wherever possible, the sector notebooks present TRI data as the primary indicator of chemical release within each industrial category. TRI data provide the type, amount and media receptor of each chemical released or transferred. When other sources of pollutant release data have been obtained, these data have been included to augment the TRI information.

TRI Data Limitations

The reader should keep in mind the following limitations regarding TRI data. Within some sectors, the majority of facilities are not subject to TRI reporting because they are not considered manufacturing industries, or because they are below TRI reporting thresholds. Examples are the mining, dry cleaning, printing, and transportation equipment cleaning

sectors. For these sectors, release information from other sources has been included.

The reader should also be aware that TRI "pounds released" data presented within the notebooks is not equivalent to a "risk" ranking for each industry. Weighting each pound of release equally does not factor in the relative toxicity of each chemical that is released. The Agency is in the process of developing an approach to assign toxicological weights to each chemical released so that one can differentiate between pollutants with significant differences in toxicity. As a preliminary indicator of the environmental impact of the industry's most commonly released chemicals, the notebook briefly summarizes the toxicological properties of the top five chemicals (by weight) reported by each industry.

Definitions Associated With Section IV Data Tables

General Definitions

SIC Code -- is the Standard Industrial Classification (SIC) is a statistical classification standard used for all establishment-based Federal economic statistics. The SIC codes facilitate comparisons between facility and industry data.

TRI Facilities -- are manufacturing facilities that have 10 or more full-time employees and are above established chemical throughput thresholds. Manufacturing facilities are defined as facilities in Standard Industrial Classification primary codes 20 through 39. Facilities must submit estimates for all chemicals that are on the EPA's defined list and are above throughput thresholds.

Data Table Column Heading Definitions

The following definitions are based upon standard definitions developed by EPA's Toxic Release Inventory Program. The categories below represent the possible pollutant destinations that can be reported.

RELEASES -- are an on-site discharge of a toxic chemical to the environment. This includes emissions to the air, discharges to bodies of water, releases at the facility to land, as well as contained disposal into underground injection wells.

Releases to Air (Point and Fugitive Air Emissions) -- Include all air emissions from industry activity. Point emission occur through confined air streams as found in stacks, ducts, or pipes. Fugitive emissions include

losses from equipment leaks, or evaporative losses from impoundments, spills, or leaks.

Releases to Water (Surface Water Discharges) -- encompass any releases going directly to streams, rivers, lakes, oceans, or other bodies of water. Any estimates for storm water runoff and non-point losses must also be included.

Releases to Land -- includes disposal of toxic chemicals in waste to on-site landfills, land treated or incorporation into soil, surface impoundments, spills, leaks, or waste piles. These activities must occur within the facility's boundaries for inclusion in this category.

Underground Injection -- is a contained release of a fluid into a subsurface well for the purpose of waste disposal.

TRANSFERS -- is a transfer of toxic chemicals in wastes to a facility that is geographically or physically separate from the facility reporting under TRI. The quantities reported represent a movement of the chemical away from the reporting facility. Except for off-site transfers for disposal, these quantities do not necessarily represent entry of the chemical into the environment.

Transfers to POTWs -- are wastewaters transferred through pipes or sewers to a publicly owned treatments works (POTW). Treatment and chemical removal depend on the chemical's nature and treatment methods used. Chemicals not treated or destroyed by the POTW are generally released to surface waters or landfilled within the sludge.

Transfers to Recycling -- are sent off-site for the purposes of regenerating or recovering still valuable materials. Once these chemicals have been recycled, they may be returned to the originating facility or sold commercially.

Transfers to Energy Recovery -- are wastes combusted off-site in industrial furnaces for energy recovery. Treatment of a chemical by incineration is not considered to be energy recovery.

Transfers to Treatment -- are wastes moved off-site for either neutralization, incineration, biological destruction, or physical separation. In some cases, the chemicals are not destroyed but prepared for further waste management.

Transfers to Disposal -- are wastes taken to another facility for disposal generally as a release to land or as an injection underground.

IV.A. EPA Toxic Release Inventory for the Dry Cleaning Industry

The Toxics Release Inventory (TRI) covers only manufacturers categorized in two-digit SIC codes 20 through 39. Therefore dry cleaning facilities which are categorized as service industry establishments (SIC 72) are not required to report to TRI. However, solvent releases from dry cleaners were estimated by the Agency for two regulatory actions, the 1993 NESHAP for HAPs (excluding petroleum solvents) and the 1984 Petroleum Dry Cleaners New Source Performance Standard. The information is explained below.

The TRI database contains a detailed compilation of self-reported, facility-specific chemical releases. The top reporting facilities for this sector are listed below. Facilities that have reported only the SIC codes covered under this notebook appear on the first list. The second list contains additional facilities that have reported the SIC code covered within this report, and one or more SIC codes that are not within the scope of this notebook. Therefore, the second list includes facilities that conduct multiple operations -- some that are under the scope of this notebook, and some that are not. Currently, the facility-level data do not allow pollutant releases to be broken apart by industrial process.

IV.B. Summary of Selected Chemicals Released

The following is a synopsis of current scientific toxicity and fate information for the top chemicals (by weight) that facilities within this sector self-reported as released to the environment based upon 1993 TRI data. Because this section is based upon self-reported release data, it does not attempt to provide information on management practices employed by the sector to reduce the release of these chemicals. Information regarding pollutant release reductions over time are available from EPA's TRI and 33/50 programs, or directly from the industrial trade associations that are listed in Section IX of this document. Since these descriptions are cursory, please consult the sources referenced below for a more detailed description of both the chemicals described in this section and the chemicals that appear on the full list of TRI chemicals appearing in Section IV.A.

The brief descriptions provided below were taken from the *1993 Toxics Release Inventory Public Data Release* (EPA, 1994), and the Hazardous Substances Data Bank (HSDB), accessed via TOXNET. TOXNET is a computer system run by the National Library of Medicine. It includes a

number of toxicological databases managed by EPA, National Cancer Institute, and the National Institute for Occupational Safety and Health.[d] HSDB contains chemical-specific information on manufacturing and use, chemical and physical properties, safety and handling, toxicity and biomedical effects, pharmacology, environmental fate and exposure potential, exposure standards and regulations, monitoring and analysis methods, and additional references. The information contained below is based upon exposure assumptions that have been conducted using standard scientific procedures. The effects listed below must be taken in context of these exposure assumptions that are more fully explained within the full chemical profiles in HSDB. For more information on TOXNET, contact the TOXNET help line at 800-231-3766.

Perchloroethylene (tetrachloroethylene) (CAS: 127-18-4)

Toxicity. Chronic exposure to perchloroethylene (PCE) has been linked to damage to the central nervous system and to a lesser extent, the lungs, liver, and kidneys. Exposure to PCE is irritating to the eyes, skin, and respiratory system.

Ecologically, experimental application of PCE to a freshwater pond led to the local extinction of several phytoplankton and zooplankton species.

Carcinogenicity. PCE is a possible human carcinogen via oral exposure.

Environmental Fate. PCE released to surface water or the soil rapidly evaporates. PCE is not expected to significantly biodegrade, bioconcentrate in aquatic organisms, hydrolyze, or significantly adsorb to sediments or soil particles. PCE released to the atmosphere degrades rapidly in the presence of sunlight. It may be subject to washout in rain.

IV.C. Other Data Sources

The primary releases from the dry cleaning industry are associated with the many solvents used. As mentioned in Section III.A., four solvents dominate: perchloroethylene, petroleum solvents, chlorofluorocarbons and trichloroethane. Estimates of national releases of hazardous air pollutants (HAPs) (excludes petroleum solvents) from the baseline estimate prior to the 1993 NESHAP are 90,200 tons/year from the commercial sector, 4,800

[d] Databases included in TOXNET are: CCRIS (Chemical Carcinogenesis Research Information System), DAR T (Developmental and Reproductive Toxicity Database), DBIR (Directory of Biotechnology Information Resources), EMICBACK (Environmental Mutagen Information Center Backfile), GENE-TOX (Genetic Toxicology), HSD B (Hazardous Substances Data Bank), IRIS (Integrated Risk Information System), RTECS (Registry of Toxic Effects of Chemical Substances), and TRI (Toxic Release Inventory).

tons/year from the industrial sector and 990 tons/year from the coin-operated sector for a total of 95,900 tons/year. The total quantity of HAPs disposed of off-site is 47,500 tons per year and is primarily from filtration residue. The recent NESHAP will reduce the air emissions by prohibiting the sale of new transfer equipment, requiring control devices on existing equipment, and requiring new equipment to be fitted with controls. The most recent petroleum solvent emission data available for the dry cleaning industry are from 1982 in support of the 1984 New Source Performance Standards. Applying the release factor of 23 pounds of solvent per 100 pounds of clothes cleaned to the total petroleum-based facility throughput yields total petroleum solvent releases of 51,000 tons per year. These releases are distributed approximately equally between commercial and industrial plants (there are no coin-operated petroleum plants). Over 75 percent of the releases are from dryers with the remainder from a combination of evaporation from filters, still releases and fugitive emissions. These values may slightly overestimate current releases because vapor control technologies such as carbon adsorbers or condensers may have been added to existing machines.

The Aerometric Information Retrieval System (AIRS) contains a wide range of information related to stationary sources of air pollution, including the emissions of a number of air pollutants which may be of concern within a particular industry. Exhibit 14 summarizes annual releases of carbon monoxide (CO), nitrogen dioxide (NO_2), particulate matter of 10 microns or less (PM_{10}), sulfur dioxide (SO_2), and volatile organic compounds (VOCs).

Exhibit 14: Pollutant Releases (short tons/year)

Industry Sector	CO	NO_2	PM_{10}	PT	SO_2	VOC
Metal Mining	5,391	28,583	39,359	140,052	84,222	1,283
Nonmetal Mining	4,525	28,804	59,305	167,948	24,129	1,736
Lumber and Wood Production	123,756	42,658	14,135	63,761	9,419	41,423
Furniture and Fixtures	2,069	2,981	2,165	3,178	1,606	59,426
Pulp and Paper	624,291	394,448	35,579	113,571	541,002	96,875
Printing	8,463	4,915	399	1,031	1,728	101,537
Inorganic Chemicals	166,147	103,575	4,107	39,062	182,189	52,091
Organic Chemicals	146,947	236,826	26,493	44,860	132,459	201,888
Petroleum Refining	419,311	380,641	18,787	36,877	648,155	369,058
Rubber and Misc. Plastics	2,090	11,914	2,407	5,355	29,364	140,741
Stone, Clay and Concrete	58,043	338,482	74,623	171,853	339,216	30,262
Iron and Steel	1,518,642	138,985	42,368	83,017	238,268	82,292
Nonferrous Metals	448,758	55,658	20,074	22,490	373,007	27,375
Fabricated Metals	3,851	16,424	1,185	3,136	4,019	102,186
Computer and Office Equipment	24	0	0	0	0	0
Electronics and Other Electrical Equipment and Components	367	1,129	207	293	453	4,854
Motor Vehicles, Bodies, Parts and Accessories	35,303	23,725	2,406	12,853	25,462	101,275
Dry Cleaning	**101**	**179**	**3**	**28**	**152**	**7,310**

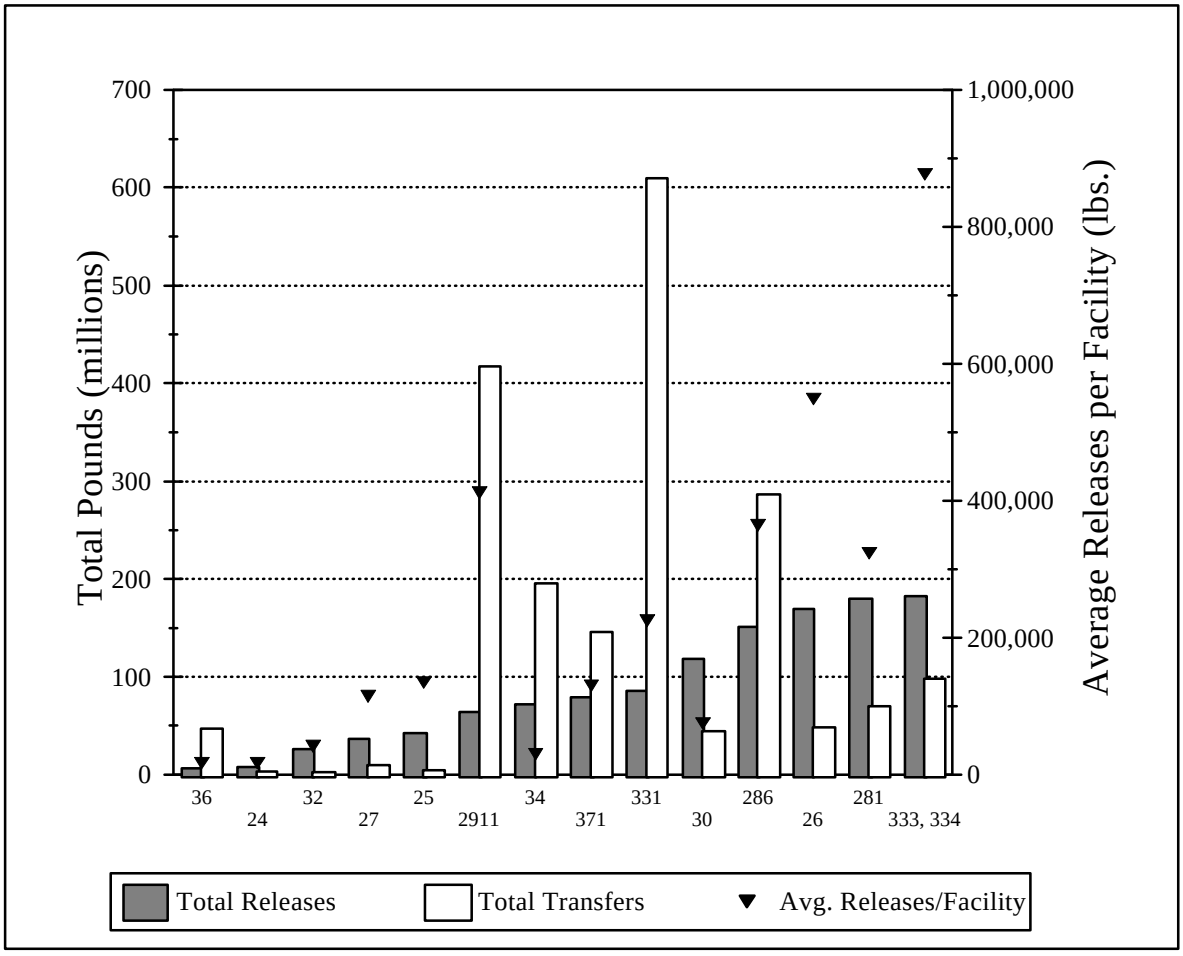
Source: U.S. EPA Office of Air and Radiation, AIRS Database, May 1995.

IV.D. Comparison of Toxic Release Inventory Between Selected Industries

The following information is presented as a comparison of pollutant release and transfer data across industrial categories. It is provided to give a general sense as to the relative scale of releases and transfers within each sector profiled under this project. Please note that the following figure and table do not contain releases and transfers for industrial categories that are not included in this project, and thus cannot be used to draw conclusions regarding the total release and transfer amounts that are reported to TRI. In addition, the dry cleaning industry sector is not subject to TRI reporting and therefore is not presented in Exhibits 14 and 15. Similar information is available within the annual TRI Public Data Release Book.

Exhibit 15 is a graphical representation of a summary of the 1993 TRI data for the dry cleaning industry and the other sectors profiled in these notebooks. The bar graph presents the total TRI releases and total transfers on the left axis and the triangle points show the average releases per facility on the right axis. Industry sectors are presented in the order of increasing total TRI releases. The graph is based on the data shown in Exhibit 16 and is meant to facilitate comparisons between the relative amounts of releases, transfers, and releases per facility both within and between these sectors. The reader should note, however, that differences in the proportion of facilities captured by TRI exist between industry sectors.

Exhibit 15: Summary of 1993 TRI Data:
Releases and Transfers by Industry



SIC Range	Industry Sector	SIC Range	Industry Sector	SIC Range	Industry Sector
36	Electronic Equipment and Components	2911	Petroleum Refining	286	Organic Chemical Mfg.
24	Lumber and Wood Products	34	Fabricated Metals	26	Pulp and Paper
32	Stone, Clay, and Concrete	371	Motor Vehicles, Bodies, Parts, and Accessories	281	Inorganic Chemical Mfg.
27	Printing	331	Iron and Steel	333,334	Nonferrous Metals
25	Wood Furniture and Fixtures	30	Rubber and Misc. Plastics		

Exhibit 16: Toxics Release Inventory Data for Selected Industries

Industry Sector	SIC Range	# TRI Facilities	1993 TRI Releases		1993 TRI Transfers		Total Releases + Transfers (million lbs.)	Average Releases + Transfers per Facility (pounds)
			Total Releases (million lbs.)	Average Releases per Facility (pounds)	Total Transfers (million lbs.)	Average Transfers per Facility (pounds)		
Stone, Clay, and Concrete	32	634	26.6	42,000	2.2	4,000	28.8	46,000
Lumber and Wood Products	24	491	8.4	17,000	3.5	7,000	11.9	24,000
Furniture and Fixtures	25	313	42.2	135,000	4.2	13,000	46.4	148,000
Printing	2711-2789	318	36.5	115,000	10.2	32,000	46.7	147,000
Electronic Equip. and Components	36	406	6.7	17,000	47.1	116,000	53.7	133,000
Rubber and Misc. Plastics	30	1,579	118.4	75,000	45	29,000	163.4	104,000
Motor Vehicles, Bodies, Parts, and Accessories	371	609	79.3	130,000	145.5	239,000	224.8	369,000
Pulp and Paper	2611-2631	309	169.7	549,000	48.4	157,000	218.1	706,000
Inorganic Chem. Mfg.	2812-2819	555	179.6	324,000	70	126,000	249.7	450,000
Petroleum Refining	2911	156	64.3	412,000	417.5	2,676,000	481.9	3,088,000
Fabricated Metals	34	2,363	72	30,000	195.7	83,000	267.7	123,000
Iron and Steel	331	381	85.8	225,000	609.5	1,600,000	695.3	1,825,000
Nonferrous Metals	333, 334	208	182.5	877,000	98.2	472,000	280.7	1,349,000
Organic Chemical Mfg.	2861-2869	417	151.6	364,000	286.7	688,000	438.4	1,052,000
Metal Mining	10	Industry sector not subject to TRI reporting.						
Nonmetal Mining	14	Industry sector not subject to TRI reporting.						
Dry Cleaning	**7216**	**Industry sector not subject to TRI reporting.**						
Source: U.S. EPA, Toxics Release Inventory Database, 1993.								

V. POLLUTION PREVENTION OPPORTUNITIES

The best way to reduce pollution is to prevent it in the first place. Some companies have creatively implemented pollution prevention techniques that improve efficiency and increase profits while at the same time minimizing environmental impacts. This can be done in many ways such as reducing material inputs, re-engineering processes to reuse by-products, improving management practices, and employing substitution of toxic chemicals. Some smaller facilities are able to actually get below regulatory thresholds just by reducing pollutant releases through aggressive pollution prevention policies.

In order to encourage these approaches, this section provides both general and company-specific descriptions of some pollution prevention advances that have been implemented within the dry cleaning industry. While the list is not exhaustive, it does provide core information that can be used as the starting point for facilities interested in beginning their own pollution prevention projects. When possible, this section provides information from real activities that can, or are being implemented by this sector -- including a discussion of associated costs, time frames, and expected rates of return. This section provides summary information from activities that may be, or are being implemented by this sector. When possible, information is provided that gives the context in which the technique can be effectively used. Please note that the activities described in this section do not necessarily apply to all facilities that fall within this sector. Facility-specific conditions must be carefully considered when pollution prevention options are evaluated, and the full impacts of the change must examine how each option affects air, land and water pollutant releases.

V.A. Pollution Prevention Opportunities for the Dry Cleaning Industry

A number of major changes within the dry cleaning industry are pushing dry cleaners toward pollution prevention. Projects such as the Design for the Environment, the import of European technologies, and increased attention on the part of state and federal regulators to dry cleaning have caused trade associations, technical assistance offices, and individual establishments to investigate possible techniques for reducing the environmental releases associated with dry cleaning. Pollution prevention approaches over the short term for existing facilities and equipment include: improved operating practices or "good housekeeping" and process and equipment retrofits. Over the long-term, there are several new fabric cleaning processes under development, some of which are commercially available while others are still in the research stage. Market forces might take longer than command and control regulations to influence cleaning technologies, as new technologies will only be adopted as existing equipment is retired and replaced.

As pointed out in Section IV.C, air releases of perchloroethylene and petroleum solvents used to clean the fabric are the primary environmental release from dry cleaning. Spills, inadequate storage and drain disposal of solvents have led to groundwater contamination. In addition, (improper) disposal of solvent laden material, such as filters, as nonhazardous solid waste is of concern.

Because chemicals constitute a large cost for dry cleaners, particularly if drying exhaust is vented directly to the atmosphere, there are significant opportunities to reduce chemical use and possibly reduce operating costs. Reduced chemical use can, in turn, reduce the waste management costs associated with regulatory requirements as well as reduce potential financial liability. Some pollution prevention strategies may reduce risk but involve a higher energy consumption.

Several operating practices can reduce potential solvent exposure if they are used regularly. The practices of importance will vary based on the type of machine. For example, the major release in a transfer machine occurs when clothes are transferred. Because dry-to-dry machines wash and dry in a single container there are no such releases. Listed below are several specific practices that may reduce releases.

Improved Operating Practices- Specific to Transfer Machines

Conduct transfer of solvent saturated clothes from washer to dryer as quickly as possible.

Close dryer door immediately upon completion of transfer.

Improved Operating Practices - All Machines

Clean the filters that precede the carbon filters weekly.

Clean lint screens to avoid clogging fans and condensers.

Open button traps and lint baskets only long enough to clean.

Check baffle assembly in cleaning machine bi-weekly.

Use closed containers for collection and storage of recovered or new solvent.

Equipment Maintenance

Clean drying sensors weekly.

Replace seals regularly on dryer deodorizer and aeration valves.

Replace door gasket on button trap.

Replace gaskets around cleaning machine door or tighten enclosure.

Repair holes in air and exhaust duct.

Secure hose connection and couplings.

Clean lint buildup on cooling condenser coils weekly.

Equipment Modification

Use a hamper enclosure or a room enclosure of impermeable construction to reduce solvent release during transfer. The enclosure should be a complete vapor barrier, especially if the dry cleaner is located in a mixed use residential setting.

Use local exhaust ventilation through washer and dryer doors or exhaust hoods between washer and dryer. The exhaust velocity should be 100 feet per minute. In addition, a supplemental door fan local exhaust system should be included on third generation equipment. This should vent through a small carbon adsorber designed to control PCE emission levels between 5-20 ppmv.
Install general ventilation that changes the air every five minutes.

Place dry cleaning equipment in separate room at negative pressure and operate a separate exhaust system to control the vapors.

Place washer and dryer close together to minimize solvent losses during transfer.

Replace the cartridge filters with spin disk filters that can be cleaned without opening. This would produce fewer fugitive emissions and less hazardous waste.

Install distillation equipment where the still bottoms can be removed without opening the still. This reduces fugitive emissions.

Use carbon adsorber that is regenerated with hot air stripping rather than steam stripping. This reduces the waste stream.

Use double carbon waste water treatment devices to clean up PCE contaminated waste waters. Recycle the treated waste water to the process boiler.

Chemical Substitutions

Alternative petroleum solvents are being developed with higher flash points to reduce the fire hazard.

Alternative petroleum solvents are being developed with lower VOC content (the drawback, however, is the longer drying time).

Use wet cleaning processes.

Major Equipment Upgrades

Add a refrigerated condenser to the machine for primary control, followed perhaps by a carbon adsorber for secondary control.

Replace a transfer machine with a dry-to-dry machine.

Upgrade a dry-to-dry machine with additional control equipment such as a spill container that will catch and recycle solvent spills from the machine.

Replace current machine with a dry-to-dry closed-loop-non-vented machine that contains an integral refrigerated condenser and an integral carbon adsorber.

Technological Innovation

The majority of the hazardous solid waste is generated by the carbon adsorbers. Several technologies are being developed that use a polymer surface for adsorbing the solvent vapor. The surface can be regenerated by heating and, unlike carbon, does not need to be replaced, thus reducing the hazardous waste.

New aqueous processes that do not use organic solvents as the primary solvent were mentioned in Section III.B**.** Multiprocess wet cleaning and machine wet cleaning have both been introduced in several sites in the U.S.

New processes that use other cleaning methods are also under development. Both ultrasonic cleaning and a clothes cleaning method that uses liquid carbon dioxide are under development.

Both pollution prevention and end-of-pipe controls have the potential to substantially reduce the risk from toxic chemical release. The primary difference is the size of the initial investment. For example, to retrofit a dry-to-dry perchloroethylene machine with a refrigerated condenser costs about $7,500 while replacing the existing unit with a fourth generation machine that is closed-loop with a built-in refrigerated condenser and secondary controls is about $47,000 (35 pound machine). However, the total cost per pound of clothes cleaned over a fifteen year lifetime is nearly identical ($0.48 to $0.50) when the solvent savings are considered. The fourth generation machine also produces lower solvent releases to air and water and creates less hazardous waste. However, with 25 percent of commercial dry cleaners taking in annual receipts of less than $28,000, the initial investment required for a new machine may be prohibitive. (Information developed for OPPT's Design for the Environment Program.)

The aqueous processes have recently been introduced to the U.S. market. They reduce pollution considerably by not introducing toxic chemicals as the primary solvent. The multiprocess wet cleaning method is cost competitive with conventional dry cleaning although in preliminary short term testing it is more labor intensive. The performance of these cleaning methods has yet to be determined on a broad scale although the Agency's Design for the Environment (DfE) test site should provide this data within two years.

Liquid carbon dioxide and the ultrasonic cleaning are currently in the development stage. While neither of these technologies uses toxic chemicals, the technical and economic feasibility must be demonstrated before they are true market options.

Most commercial dry cleaners are small shops. Over twenty-five percent of dry cleaners have owners of Korean descent. Commercial dry cleaners may not be in compliance with current regulations because of lack of familiarity with the law or communication barriers. Dry cleaners get much of their technical information from their trade associations and their equipment suppliers who may only have information on their products. This could limit the dissemination of information on innovative alternatives such as machine wet cleaning which tends to be manufactured by washing machine makers rather than dry cleaning machine makers.

The Agency's Design for the Environment program has already participated in a number of outreach activities. These include attending trade shows to discuss alternatives, conducting a demonstration of multiprocess wet cleaning and arranging for a demonstration of several

alternative technologies over the next two years. A full description of the program is provided in Section VIII.A.

Showing the commercial viability of alternatives is likely to produce the largest leverage for pollution prevention since dry cleaners are skeptical that new technologies will clean as well as the current process. However, current fashion trends, the introduction of new washable fabrics and the increased use of casual (washable) clothes in the work place have created opportunities for new processes and the increased use of traditional laundry.

Pollution prevention will reduce the releases of solvents to air and water and reduce the quantity of solid waste produced. Controlling releases will reduce worker exposure, customer exposure and the exposure of residents in multi use buildings that contain dry cleaners. Some pollution prevention efforts may also be cost effective for the dry cleaner if the solvent savings are significant. Finally, the fact that a dry cleaner is environmentally sound could be used in marketing. If customers prefer such "green cleaning," the fact that a cleaner is practicing pollution prevention could increase sales.

VI. SUMMARY OF APPLICABLE FEDERAL STATUTES AND REGULATIONS

This section discusses the Federal regulations that may apply to this sector. The purpose of this section is to highlight, and briefly describe the applicable Federal requirements, and to provide citations for more detailed information. The three following sections are included.

- Section VI.A. contains a general overview of major statutes
- Section VI.B. contains a list of regulations specific to this industry
- Section VI.C. contains a list of pending and proposed regulations

The descriptions within Section VI are intended solely for general information. Depending upon the nature or scope of the activities at a particular facility, these summaries may or may not necessarily describe all applicable environmental requirements. Moreover, they do not constitute formal interpretations or clarifications of the statutes and regulations. For further information, readers should consult the Code of Federal Regulations and other state or local regulatory agencies. EPA Hotline contacts are also provided for each major statute.

VI.A. General Description of Major Statutes

Resource Conservation And Recovery Act

The Resource Conservation And Recovery Act (RCRA) of 1976 which amended the Solid Waste Disposal Act, addresses solid (Subtitle D) and hazardous (Subtitle C) waste management activities. The Hazardous and Solid Waste Amendments (HSWA) of 1984 strengthened RCRA's waste management provisions and added Subtitle I, which governs underground storage tanks (USTs).

Regulations promulgated pursuant to Subtitle C of RCRA (40 CFR Parts 260-299) establish a "cradle-to-grave" system governing hazardous waste from the point of generation to disposal. RCRA hazardous wastes include the specific materials listed in the regulations (commercial chemical products, designated with the code "P" or "U"; hazardous wastes from specific industries/sources, designated with the code "K"; or hazardous wastes from non-specific sources, designated with the code "F") or materials which exhibit a hazardous waste characteristic (ignitability, corrosivity, reactivity, or toxicity and designated with the code "D").

Regulated entities that generate hazardous waste are subject to waste accumulation, manifesting, and record keeping standards. Facilities that treat, store, or dispose of hazardous waste must obtain a permit, either from EPA or from a State agency which EPA has authorized to implement the

permitting program. Subtitle C permits contain general facility standards such as contingency plans, emergency procedures, record keeping and reporting requirements, financial assurance mechanisms, and unit-specific standards. RCRA also contains provisions (40 CFR Part 264 Subpart S and §264.10) for conducting corrective actions which govern the cleanup of releases of hazardous waste or constituents from solid waste management units at RCRA-regulated facilities.

Although RCRA is a Federal statute, many States implement the RCRA program. Currently, EPA has delegated its authority to implement various provisions of RCRA to 46 of the 50 States.

Most RCRA requirements are not industry specific but apply to any company that transports, treats, stores, or disposes of hazardous waste. Here are some important RCRA regulatory requirements:

- **Identification of Solid and Hazardous Wastes** (40 CFR Part 261) lays out the procedure every generator should follow to determine whether the material created is considered a hazardous waste, solid waste, or is exempted from regulation.

- **Standards for Generators of Hazardous Waste** (40 CFR Part 262) establishes the responsibilities of hazardous waste generators including obtaining an ID number, preparing a manifest, ensuring proper packaging and labeling, meeting standards for waste accumulation units, and record keeping and reporting requirements. Generators can accumulate hazardous waste for up to 90 days (or 180 days depending on the amount of waste generated) without obtaining a permit.

- **Land Disposal Restrictions** (LDRs) are regulations prohibiting the disposal of hazardous waste on land without prior treatment. Under the LDRs (40 CFR 268), materials must meet land disposal restriction (LDR) treatment standards prior to placement in a RCRA land disposal unit (landfill, land treatment unit, waste pile, or surface impoundment). Wastes subject to the LDRs include solvents, electroplating wastes, heavy metals, and acids. Generators of waste subject to the LDRs must provide notification of such to the designated TSD facility to ensure proper treatment prior to disposal.

- **Used Oil** storage and disposal regulations (40 CFR Part 279) do not define **Used Oil Management Standards** impose management requirements affecting the storage, transportation, burning, processing, and re-refining of the used oil. For parties that merely

generate used oil, regulations establish storage standards. For a party considered a used oil marketer (one who generates and sells off-specification used oil directly to a used oil burner), additional tracking and paperwork requirements must be satisfied.

- **Tanks and Containers** used to store hazardous waste with a high volatile organic concentration must meet emission standards under RCRA. Regulations (40 CFR Part 264-265, Subpart CC) require generators to test the waste to determine the concentration of the waste, to satisfy tank and container emissions standards, and to inspect and monitor regulated units. These regulations apply to all facilities who store such waste, including generators operating under the 90-day accumulation rule.

- **Underground Storage Tanks** (USTs) containing petroleum and hazardous substance are regulated under Subtitle I of RCRA. Subtitle I regulations (40 CFR Part 280) contain tank design and release detection requirements, as well as financial responsibility and corrective action standards for USTs. The UST program also establishes increasingly stringent standards, including upgrade requirements for existing tanks, that must be met by 1998.

- **Boilers and Industrial Furnaces** (BIFs) that use or burn fuel containing hazardous waste must comply with strict design and operating standards. BIF regulations (40 CFR Part 266, Subpart H) address unit design, provide performance standards, require emissions monitoring, and restrict the type of waste that may be burned.

EPA's RCRA/Superfund/UST Hotline, at (800) 424-9346, responds to questions and distributes guidance regarding all RCRA regulations. The RCRA Hotline operates weekdays from 8:30 a.m. to 7:30 p.m., ET, excluding Federal holidays.

Comprehensive Environmental Response, Compensation, And Liability Act

The Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), a 1980 law commonly known as Superfund, authorizes EPA to respond to releases, or threatened releases, of hazardous substances that may endanger public health, welfare, or the environment. CERCLA also enables EPA to force parties responsible for environmental contamination to clean it up or to reimburse the Superfund for response costs incurred by EPA. The Superfund Amendments and Reauthorization Act (SARA) of 1986 revised various sections of CERCLA, extended the taxing authority for the Superfund, and created a free-standing law, SARA

Title III, also known as the Emergency Planning and Community Right-to-Know Act (EPCRA).

The CERCLA **hazardous substance release reporting regulations** (40 CFR Part 302) direct the person in charge of a facility to report to the National Response Center (NRC) any environmental release of a hazardous substance which exceeds a reportable quantity. Reportable quantities are defined and listed in 40 CFR §302.4. A release report may trigger a response by EPA, or by one or more Federal or State emergency response authorities.

EPA implements **hazardous substance responses** according to procedures outlined in the National Oil and Hazardous Substances Pollution Contingency Plan (NCP) (40 CFR Part 300). The NCP includes provisions for permanent cleanups, known as remedial actions, and other cleanups referred to as "removals." EPA generally takes remedial actions only at sites on the National Priorities List (NPL), which currently includes approximately 1300 sites. Both EPA and states can act at other sites; however, EPA provides responsible parties the opportunity to conduct removal and remedial actions and encourages community involvement throughout the Superfund response process.

EPA's RCRA/Superfund/UST Hotline, at (800) 424-9346, answers questions and references guidance pertaining to the Superfund program. The CERCLA Hotline operates weekdays from 8:30 a.m. to 7:30 p.m., ET, excluding Federal holidays.

Emergency Planning And Community Right-To-Know Act

The Superfund Amendments and Reauthorization Act (SARA) of 1986 created the Emergency Planning and Community Right-to-Know Act (EPCRA, also known as SARA Title III), a statute designed to improve community access to information about chemical hazards and to facilitate the development of chemical emergency response plans by State and local governments. EPCRA required the establishment of State emergency response commissions (SERCs), responsible for coordinating certain emergency response activities and for appointing local emergency planning committees (LEPCs).

EPCRA and the EPCRA regulations (40 CFR Parts 350-372) establish four types of reporting obligations for facilities which store or manage specified chemicals:

- **EPCRA §302** requires facilities to notify the SERC and LEPC of the presence of any "extremely hazardous substance" (the list of

such substances is in 40 CFR Part 355, Appendices A and B) if it has such substance in excess of the substance's threshold planning quantity, and directs the facility to appoint an emergency response coordinator.

- **EPCRA §304** requires the facility to notify the SERC and the LEPC in the event of a release exceeding the reportable quantity of a CERCLA hazardous substance or an EPCRA extremely hazardous substance.

- **EPCRA §311 and §312** require a facility at which a hazardous chemical, as defined by the Occupational Safety and Health Act, is present in an amount exceeding a specified threshold to submit to the SERC, LEPC and local fire department material safety data sheets (MSDSs) or lists of MSDS's and hazardous chemical inventory forms (also known as Tier I and II forms). This information helps the local government respond in the event of a spill or release of the chemical.

- **EPCRA §313** requires manufacturing facilities included in SIC codes 20 through 39, which have ten or more employees, and which manufacture, process, or use specified chemicals in amounts greater than threshold quantities, to submit an annual toxic chemical release report. This report, commonly known as the Form R, covers releases and transfers of toxic chemicals to various facilities and environmental media, and allows EPA to compile the national Toxic Release Inventory (TRI) database.

All information submitted pursuant to EPCRA regulations is publicly accessible, unless protected by a trade secret claim.

EPA's EPCRA Hotline, at (800) 535-0202, answers questions and distributes guidance regarding the emergency planning and community right-to-know regulations. The EPCRA Hotline operates weekdays from 8:30 a.m. to 7:30 p.m., ET, excluding Federal holidays.

Clean Water Act

The primary objective of the Federal Water Pollution Control Act, commonly referred to as the Clean Water Act (CWA), is to restore and maintain the chemical, physical, and biological integrity of the nation's surface waters. Pollutants regulated under the CWA include "priority" pollutants, including various toxic pollutants; "conventional" pollutants, such as biochemical oxygen demand (BOD), total suspended solids (TSS),

fecal coliform, oil and grease, and pH; and "non-conventional" pollutants, including any pollutant not identified as either conventional or priority.

The CWA regulates both direct and indirect discharges. The **National Pollutant Discharge Elimination System (NPDES)** program (CWA §402) controls direct discharges into navigable waters. Direct discharges or "point source" discharges are from sources such as pipes and sewers. NPDES permits, issued by either EPA or an authorized State (EPA has presently authorized forty States to administer the NPDES program), contain industry-specific, technology-based and/or water quality-based limits, and establish pollutant monitoring and reporting requirements. A facility that intends to discharge into the nation's waters must obtain a permit prior to initiating its discharge. A permit applicant must provide quantitative analytical data identifying the types of pollutants present in the facility's effluent. The permit will then set forth the conditions and effluent limitations under which a facility may make a discharge.

A NPDES permit may also include discharge limits based on Federal or State water quality criteria or standards, that were designed to protect designated uses of surface waters, such as supporting aquatic life or recreation. These standards, unlike the technological standards, generally do not take into account technological feasibility or costs. Water quality criteria and standards vary from State to State, and site to site, depending on the use classification of the receiving body of water. Most States follow EPA guidelines which propose aquatic life and human health criteria for many of the 126 priority pollutants.

Storm Water Discharges

In 1987 the CWA was amended to require EPA to establish a program to address **storm water discharges**. In response, EPA promulgated the NPDES storm water permit application regulations. Storm water discharge associated with industrial activity means the discharge from any conveyance which is used for collecting and conveying storm water and which is directly related to manufacturing, processing, or raw material storage areas at an industrial plant (40 CFR 122.26(b)(14)). These regulations require that facilities with the following storm water discharges apply for an NPDES permit: (1) a discharge associated with industrial activity; (2) a discharge from a large or medium municipal storm sewer system; or (3) a discharge which EPA or the State determines to contribute to a violation of a water quality standard or is a significant contributor of pollutants to waters of the United States.

The term "storm water discharge associated with industrial activity" means a storm water discharge from one of 11 categories of industrial activity defined at 40 CFR 122.26. Six of the categories are defined by SIC codes

while the other five are identified through narrative descriptions of the regulated industrial activity. If the primary SIC code of the facility is one of those identified in the regulations, the facility is subject to the storm water permit application requirements. If any activity at a facility is covered by one of the five narrative categories, storm water discharges from those areas where the activities occur are subject to storm water discharge permit application requirements.

Those facilities/activities that are subject to storm water discharge permit application requirements are identified below. To determine whether a particular facility falls within one of these categories, the regulation should be consulted.

Category i: Facilities subject to storm water effluent guidelines, new source performance standards, or toxic pollutant effluent standards.

Category ii: Facilities classified as SIC 24-lumber and wood products (except wood kitchen cabinets); SIC 26-paper and allied products (except paperboard containers and products); SIC 28-chemicals and allied products (except drugs and paints); SIC 291-petroleum refining; and SIC 311-leather tanning and finishing.

Category iii: Facilities classified as SIC 10-metal mining; SIC 12-coal mining; SIC 13-oil and gas extraction; and SIC 14-nonmetallic mineral mining.

Category iv: Hazardous waste treatment, storage, or disposal facilities.

Category v: Landfills, land application sites, and open dumps that receive or have received industrial wastes.

Category vi: Facilities classified as SIC 5015-used motor vehicle parts; and SIC 5093-automotive scrap and waste material recycling facilities.

Category vii: Steam electric power generating facilities.

Category viii: Facilities classified as SIC 40-railroad transportation; SIC 41-local passenger transportation; SIC 42-trucking and warehousing (except public warehousing and storage); SIC 43-U.S. Postal Service; SIC 44-water transportation; SIC 45-transportation by air; and SIC 5171-petroleum bulk storage stations and terminals.

Category ix: Sewage treatment works.

Category x: Construction activities except operations that result in the disturbance of less than five acres of total land area.

Category xi: Facilities classified as SIC 20-food and kindred products; SIC 21-tobacco products; SIC 22-textile mill products; SIC 23-apparel related products; SIC 2434-wood kitchen cabinets manufacturing; SIC 25-furniture and fixtures; SIC 265-paperboard containers and boxes; SIC 267-converted paper and paperboard products; SIC 27-printing, publishing, and allied industries; SIC 283-drugs; SIC 285-paints, varnishes, lacquer, enamels, and allied products; SIC 30-rubber and plastics; SIC 31-leather and leather products (except leather and tanning and finishing); SIC 323-glass products; SIC 34-fabricated metal products (except fabricated structural metal); SIC 35-industrial and commercial machinery and computer equipment; SIC 36-electronic and other electrical equipment and components; SIC 37-transportation equipment (except ship and boat building and repairing); SIC 38-measuring, analyzing, and controlling instruments; SIC 39-miscellaneous manufacturing industries; and SIC 4221-4225-public warehousing and storage.

Pretreatment Program

Another type of discharge that is regulated by the CWA is one that goes to a publicly-owned treatment works (POTWs). The national **pretreatment program** (CWA §307(b)) controls the indirect discharge of pollutants to POTWs by "industrial users." Facilities regulated under §307(b) must meet certain pretreatment standards. The goal of the pretreatment program is to protect municipal wastewater treatment plants from damage that may occur when hazardous, toxic, or other wastes are discharged into a sewer system and to protect the quality of sludge generated by these plants. Discharges to a POTW are regulated primarily by the POTW itself, rather than the State or EPA.

EPA has developed technology-based standards for industrial users of POTWs. Different standards apply to existing and new sources within each category. "Categorical" pretreatment standards applicable to an industry on a nationwide basis are developed by EPA. In addition, another kind of pretreatment standard, "local limits," are developed by the POTW in order to assist the POTW in achieving the effluent limitations in its NPDES permit.

Regardless of whether a State is authorized to implement either the NPDES or the pretreatment program, if it develops its own program, it may enforce requirements more stringent than Federal standards.

EPA's Office of Water, at (202) 260-5700, will direct callers with questions about the CWA to the appropriate EPA office. EPA also maintains a bibliographic database of Office of Water publications which can be accessed through the Ground Water and Drinking Water resource center, at (202) 260-7786.

Safe Drinking Water Act

The Safe Drinking Water Act (SDWA) mandates that EPA establish regulations to protect human health from contaminants in drinking water. The law authorizes EPA to develop national drinking water standards and to create a joint Federal-State system to ensure compliance with these standards. The SDWA also directs EPA to protect underground sources of drinking water through the control of underground injection of liquid wastes.

EPA has developed primary and secondary drinking water standards under its SDWA authority. EPA and authorized States enforce the primary drinking water standards, which are, contaminant-specific concentration limits that apply to certain public drinking water supplies. Primary drinking water standards consist of maximum contaminant level goals (MCLGs), which are non-enforceable health-based goals, and maximum contaminant levels (MCLs), which are enforceable limits set as close to MCLGs as possible, considering cost and feasibility of attainment.

The SDWA **Underground Injection Control** (UIC) program (40 CFR Parts 144-148) is a permit program which protects underground sources of drinking water by regulating five classes of injection wells. UIC permits include design, operating, inspection, and monitoring requirements. Wells used to inject hazardous wastes must also comply with RCRA corrective action standards in order to be granted a RCRA permit, and must meet applicable RCRA land disposal restrictions standards. The UIC permit program is primarily State-enforced, since EPA has authorized all but a few States to administer the program.

The SDWA also provides for a Federally-implemented Sole Source Aquifer program, which prohibits Federal funds from being expended on projects that may contaminate the sole or principal source of drinking water for a given area, and for a State-implemented Wellhead Protection program, designed to protect drinking water wells and drinking water recharge areas.

EPA's Safe Drinking Water Hotline, at (800) 426-4791, answers questions and distributes guidance pertaining to SDWA standards. The Hotline

operates from 9:00 a.m. through 5:30 p.m., ET, excluding Federal holidays.

Toxic Substances Control Act

The Toxic Substances Control Act (TSCA) granted EPA authority to create a regulatory framework to collect data on chemicals in order to evaluate, assess, mitigate, and control risks which may be posed by their manufacture, processing, and use. TSCA provides a variety of control methods to prevent chemicals from posing unreasonable risk.

TSCA standards may apply at any point during a chemical's life cycle. Under TSCA §5, EPA has established an inventory of chemical substances. If a chemical is not already on the inventory, and has not been excluded by TSCA, a premanufacture notice (PMN) must be submitted to EPA prior to manufacture or import. The PMN must identify the chemical and provide available information on health and environmental effects. If available data are not sufficient to evaluate the chemical's effects, EPA can impose restrictions pending the development of information on its health and environmental effects. EPA can also restrict significant new uses of chemicals based upon factors such as the projected volume and use of the chemical.

Under TSCA §6, EPA can ban the manufacture or distribution in commerce, limit the use, require labeling, or place other restrictions on chemicals that pose unreasonable risks. Among the chemicals EPA regulates under §6 authority are asbestos, chlorofluorocarbons (CFCs), and polychlorinated biphenyls (PCBs).

EPA's TSCA Assistance Information Service, at (202) 554-1404, answers questions and distributes guidance pertaining to Toxic Substances Control Act standards. The Service operates from 8:30 a.m. through 4:30 p.m., ET, excluding Federal holidays.

Clean Air Act

The Clean Air Act (CAA) and its amendments, including the Clean Air Act Amendments (CAAA) of 1990, are designed to "protect and enhance the nation's air resources so as to promote the public health and welfare and the productive capacity of the population." The CAA consists of six sections, known as Titles, which direct EPA to establish national standards for ambient air quality and for EPA and the States to implement, maintain, and enforce these standards through a variety of mechanisms. Under the CAAA, many facilities will be required to obtain permits for the first time. State and local governments oversee, manage, and enforce many of the

requirements of the CAAA. CAA regulations appear at 40 CFR Parts 50-99.

Pursuant to Title I of the CAA, EPA has established national ambient air quality standards (NAAQSs) to limit levels of "criteria pollutants," including carbon monoxide, lead, nitrogen dioxide, particulate matter, ozone, and sulfur dioxide. Geographic areas that meet NAAQSs for a given pollutant are classified as attainment areas; those that do not meet NAAQSs are classified as non-attainment areas. Under §110 of the CAA, each State must develop a State Implementation Plan (SIP) to identify sources of air pollution and to determine what reductions are required to meet Federal air quality standards.

Title I also authorizes EPA to establish New Source Performance Standards (NSPSs), which are nationally uniform emission standards for new stationary sources falling within particular industrial categories. NSPSs are based on the pollution control technology available to that category of industrial source but allow the affected industries the flexibility to devise a cost-effective means of reducing emissions.

Under Title I, EPA establishes and enforces National Emission Standards for Hazardous Air Pollutants (NESHAPs), nationally uniform standards oriented towards controlling particular hazardous air pollutants (HAPs). Title III of the CAAA further directed EPA to develop a list of sources that emit any of 189 HAPs, and to develop regulations for these categories of sources. To date EPA has listed 174 categories and developed a schedule for the establishment of emission standards. The emission standards will be developed for both new and existing sources based on "maximum achievable control technology" (MACT). The MACT is defined as the control technology achieving the maximum degree of reduction in the emission of the HAPs, taking into account cost and other factors.

Title II of the CAA pertains to mobile sources, such as cars, trucks, buses, and planes. Reformulated gasoline, automobile pollution control devices, and vapor recovery nozzles on gas pumps are a few of the mechanisms EPA uses to regulate mobile air emission sources.

Title IV establishes a sulfur dioxide emissions program designed to reduce the formation of acid rain. Reduction of sulfur dioxide releases will be obtained by granting to certain sources limited emissions allowances, which, beginning in 1995, will be set below previous levels of sulfur dioxide releases.

Title V of the CAAA of 1990 created a permit program for all "major sources" (and certain other sources) regulated under the CAA. One

purpose of the operating permit is to include in a single document all air emissions requirements that apply to a given facility. States are developing the permit programs in accordance with guidance and regulations from EPA. Once a State program is approved by EPA, permits will be issued and monitored by that State.

Title VI is intended to protect stratospheric ozone by phasing out the manufacture of ozone-depleting chemicals and restrict their use and distribution. Production of Class I substances, including 15 kinds of chlorofluorocarbons (CFCs), will be phased out entirely by the year 2000, while certain hydrochlorofluorocarbons (HCFCs) will be phased out by 2030.

EPA's Control Technology Center, at (919) 541-0800, provides general assistance and information on CAA standards. The Stratospheric Ozone Information Hotline, at (800) 296-1996, provides general information about regulations promulgated under Title VI of the CAA, and EPA's EPCRA Hotline, at (800) 535-0202, answers questions about accidental release prevention under CAA §112(r). In addition, the Technology Transfer Network Bulletin Board System (modem access (919) 541-5742)) includes recent CAA rules, EPA guidance documents, and updates of EPA activities.

VI.B. Industry Specific Regulatory Requirements

The dry cleaning industry is becoming increasingly regulated at the Federal, State and local levels. Some of the regulations are directed specifically at dry cleaners such as the new National Emission Standard for Hazardous Air Pollutants (NESHAP) for Perchloroethylene Dry Cleaning. Other regulations are more general but are also likely to affect a significant part of the industry such as standards on underground tank storage. The major Federal laws that affect dry cleaners are identified below, as well as a few state regulations that may be indicators of national trends.

Occupational Safety and Health Act

The Occupational Safety and Health Administration proposed a 25 part per million permissible exposure level (PEL) for perchloroethylene that was to take effect on January 19, 1989. Before December 31, 1993, the PEL could be met by using personal protective equipment; however, after that date the PEL needed to be met by controls. Development of new dry cleaning machines (fourth generation) with recycling air and additional controls was underway to meet the requirement when the proposed limit was remanded in March 23, 1993, because of legal and administrative

technicalities. The PEL reverted to 100 ppm; however, some states have already included the 25 ppm level in their regulations.

Clean Air Act Amendments of 1990

A number of provisions of the Clean Air Act Amendments (CAAA) of 1990 affect the dry cleaning industry. The most recent is the September 1993 promulgation of the National Emission Standards for Hazardous Air Pollutants (NESHAP) for the Perchloroethylene Dry Cleaning Industry covering the 80 percent of the industry that uses perchloroethylene solvent. These standards prohibit the sale of new transfer machines (although existing, those machines installed prior to December 1993, transfer machines are allowed), require retrofitting of existing (defined as installed prior to December 1993) dry cleaning equipment with control devices (if they fall under the large area and major source classifications) and require new machines to be sold with such technology (40 CFR §63.320). Title VI of the Clean Air Act Amendments of 1990 calls for a ban on chlorofluorocarbons in the year 2000 and on trichloroethane in 2002 because of their ozone depleting potential. In February of 1992, President Bush announced that the ban on CFCs and TCA would be effective in the United States on December 31, 1995. The Agency also issued New Source Performance Standards (NSPS) for petroleum-based dry cleaners in 1984 (petroleum-based dry cleaners represent less than 15 percent of the market) (49 FR 37328). These are applicable in CAA non-attainment areas and may also have been adopted by individual states. They set limits on solvent loss from drying, set standards on the use of filters, and require leaks to be repaired in a timely fashion. Dry cleaners must add control devices to reduce solvent loss from the washer and dryer as well as the filters. In addition, they must monitor their machines more closely for leaks.

Comprehensive Environmental Response, Compensation and Liability Act (1980) and Superfund Amendments and Reauthorization Act (1986)

Dry cleaners or their landlords may be held joint and severally liable for perchloroethylene contamination of the site under the Comprehensive Environmental Response, Compensation and Liability Act (Superfund) (40 CFR §305). The contamination may occur by having PCE containing waste water leak through sewer pipes or by leaks of PCE during normal operation.

Resource Conservation and Recovery Act

Under the Resource Conservation and Recovery Act (RCRA) dry cleaners who generate 100 kilograms (220 pounds) or more of perchloroethylene

solid wastes (hazardous waste code D039) such as still bottoms, cartridge filters and filter muck each month are regulated under RCRA and must dispose of their wastes at a licensed hazardous waste facility (40 CFR. §260-270). Small quantity generators are defined as those who generate less than 100 kilograms and are exempt from this regulation (40 CFR §261.5). The slightly contaminated waste water generated by dry cleaners from various sources is considered hazardous waste under RCRA because it was derived from an F002 waste. The toxicity characteristic leaching procedure (TC) cutoff for perchloroethylene is 0.7 ppm. Typical separator water contains about 150 ppm and is therefore considered hazardous because it exceeds the TC level.

Underground Storage Tanks

Dry cleaning facilities that store either petroleum or perchloroethylene in an underground storage tank are subject to the Agency's underground storage tank regulations which require that the tank must be protected from corrosion, be equipped with devices that prevent spills and overfills and must have a leak detection method that provides monitoring for leaks at least every 30 days (40 CFR §265.190-196).

Clean Water Act

Discharges to a POTW - Facilities discharging wastewater to a sewer are often subject to restrictions required under the Clean Water Act (CWA). These restrictions are established by the local sewerage authority to prevent significant interference with the treatment facility or pass-through of pollutants not removed by treatment (40 CFR §125). The specific requirements include: notifying the POTW of discharges that could cause problems at the POTW, monitoring and record keeping as established by the POTW and a one-time notice of the discharge of hazardous waste, specifically if more than 33 pounds/month.

State Regulations

Several states have developed additional dry cleaning regulations. New York and California serve as examples.

New York

A negotiating committee of organizations representing dry cleaners, equipment manufacturers, consumer interests and regulatory agencies reached conceptual agreement in March 1994 on revised regulations to control emissions from dry cleaning facilities in New York State. The regulations include requirements for operator training and certification,

equipment certification, inspection and monitoring, and stringent new equipment standards which include the retrofitting of existing equipment. A finalized draft will be released before the end of the year for public comment.

The agreement calls for the phased replacement of older dry cleaning equipment with state-of-the-art closed-loop machines that use a refrigerated condenser and an integrated carbon adsorber. The regulations call for the complete phase out of older transfer machines by 1996, the addition of vapor barriers or room enclosures by late 1995 for dry cleaners using older machines, and room ventilation systems providing a complete air exchange every five minutes.

The agreement specifies that manufacturers and/or vendors of new dry cleaning equipment must have their equipment tested and certified that it meets certain standards before it can be installed. The committee is developing new standards covering the operation and maintenance of dry cleaning facilities that will go into effect in 1996. (Contacts: Lenore Kuwik 518-457-2224 and Michael Barylski 607-753-3095 at the NY State Department of Environmental Conservation)

California

The California regulations are contained in the Airborne Toxic Control Measure (CATCM) for Emissions of Perchloroethylene from Dry Cleaning Operations (17 and 25 CCR §93109). The requirements for existing and new facilities regarding dry cleaning equipment include initial notification of installation, annual reporting to the state, maintenance of good operating practices to reduce emissions, and fugitive emissions control when applying water repellent using PCE as the solvent. Existing facilities must use either a converted closed-loop machine with a primary control system or a closed-loop machine with a primary control system. New facilities are required to use a closed-loop machine with both primary and secondary control systems once their district's have approved the ATCM.

Districts within California are allowed to supersede the ATCM if district regulations are more stringent than State regulations. At this time, only the Bay Area and the South Coast Air Quality Management Districts have proposals to supersede the ATCM; other districts are assumed to be following the ATCM. (Contact: Todd Wong, California Air Resources Board, 916 322-8285)

The **Bay Area Air Quality Management District** (BAAQMD) has proposed stricter controls than the ATCM including secondary controls and vapor barrier rooms in residential facilities and ventilation systems in

non-residential facilities. They also allow evaporators to be used with certain minor criteria attached. (Contact: Scott Lutz, Bay Area Air Quality Management District, 415-749-4676)

The **South Coast Air Quality Management District** (SQAQMD) Proposal 1421 includes the control requirements in California's ATCM while keeping the NESHAP requirements for record keeping, inspection, and repair. Reporting requirements are derived from a combination of both the NESHAP and the ATCM. Specifically, Proposal 1421 requires that relocating facilities obtain a permit as if they were new facilities, waste water elimination systems be used, and facilities keep records of their solvent use for five years.

The SCAQMD is also creating the requirements for establishing a list of approved equipment. The basic structure is that the manufacturers/ distributors will demonstrate the 1421 compliance of their equipment. Once the equipment has been approved, it will be added to the list of equipment considered in compliance with the regulations. The SCAQMD hopes this will facilitate dry cleaner adherence to the regulations. (Contact: Pierre Sycip, South Coast Air Quality Management District, 909-396-3095)

VI.C. Pending and Proposed Regulatory Requirements

Petroleum solvents are currently regulated under the new source performance standards for VOCs and will be listed as a source category for toxic substances in the year 2000. (Contact: Steve Shedd, U.S. EPA, 919-541-5397)